

EXHIBIT A

Claim, Limitation	Relevant section of trial transcript	Failure of Proof
885 patent, Claim 1		
A computer system for providing image-based rendering of real property, the computer system comprising	576:2-25	
processor implementing program commands and processing data; memory storing program commands and processing the data; the memory being operatively coupled to the processor	577:1-2	Insufficient evidence. Insufficient identification of a processor and memory operatively coupled with commands.
user interface visually presenting an image-based rendering of real property, the user interface being operatively coupled with the memory and the processor	577:24-578:23	Insufficient evidence of: specific user interface; “operatively coupled”; “the memory and processor”
wherein the program commands cause the processor to:	578:24-579:8	Insufficient evidence. Insufficient identification of program commands for all elements

obtain two or more photorealistic viewpoints from capture locations in a plurality of spaces of the real property using ground truth image data, the ground truth image data including images of the real property captured from capture locations	579:9-581:10	Insufficient evidence of program commands.
combine and process two or more instances of ground truth data to create a plurality of synthesized viewpoints		Insufficient evidence of program commands.
generate a virtual model of a current space from the plurality of spaces, in the real property from the perspective of a current viewpoint the current viewpoint is being one of the plurality of photorealistic viewpoints or one of the synthesized viewpoints associated with the current space.	583:22-584:23	Insufficient evidence of program commands

identify the current space in the real property where the current viewpoint is located using metadata associated with the ground truth image data		Insufficient evidence of program commands
visually present the virtual model on a first portion of the user interface, a map overlay on a second portion of the user interface and a text overlay on a third portion of the user interface the map overlay indicating a position of the current viewpoint in the current space, the text overlay including a first label identifying the current space in the real property where the current viewpoint is located	586:12-588:12	Insufficient evidence of program commands
generating a plurality of spatial boundaries of the plurality of spaces of the real property, each of the plurality of spatial boundaries defining a parcel outline of a corresponding space	588:12-593:5	Insufficient evidence of program commands

among the plurality of spaces.		
generate the ground truth image data by annotating the images of the real property with second labels indicating the capture locations using the plurality of spatial boundaries.	593:23-595:4.	Insufficient evidence of program commands
wherein the virtual model, the map overlay and the text overlay are functionally linked based on the position of the current viewpoint in the real property.	595:5-11	Insufficient evidence of program commands
wherein identifying the current space in the real property where the current viewpoint is located using the metadata associated with the ground truth image data includes identifying the first label using the second labels indicating the capture location	596:17-598:4	Insufficient evidence of program commands
885 patent, claim 3		

the computer system of claim 1 wherein the synthetic viewpoints enable rotation about a vertical axis and a pitch	598:15-599:10	Insufficient evidence of program commands
program commands further causes the processor to receive an offer to schedule an in-person tour of the real property	599:23-600:5	Insufficient evidence of program commands

Claim, Limitation	Trial Transcript Discussion	Issue
973 patent, Claim 1		
A computer-readable memory medium containing program commands for controlling a computer processor, when executed, to provide image-based rendering of a real property, by performing a method comprising	613:16-615:2	Insufficient evidence of computer readable memory medium with program commands that control a processor to perform the required method steps.
obtaining two or more views from capture locations in a plurality of spaces of the real property using ground truth image data, the ground truth image data, including images of the real property captured from the capture locations	615:9-616:3	Insufficient evidence of program commands
defining a plurality of spatial boundaries of the plurality of spaces of the real property, each spatial boundary delineating a volume of one or more of the plurality of spaces, at	616:4-618:23	Insufficient evidence of program commands

least one of the plurality of spatial boundaries defining a parcel outline of the real property, and at least one of the plurality of spatial boundaries defining a space located within the parcel outline;		
annotating the ground truth image data by annotating at least some of the captured images of the real property with information indicating a capture location of a corresponding image relative to a corresponding spatial boundary, each capture location identifying a location within the corresponding spatial boundary defined space or identifying the space delineated by the corresponding spatial boundary;	618:24-620:22	Insufficient evidence of program commands
combining and processing two or more instances of the ground truth image data	621:5-622:10	Insufficient evidence of program commands

to create a plurality of synthesized views, wherein the synthesized views comprise one or more of composites, transitions, or projections derived from processing ground truth image data.		
wherein the synthesized views are associated with the corresponding spaces of the plurality of spaces of the real property	622:21-623:1	Insufficient evidence of program commands
generating and rendering a virtual model of a current space within the plurality of spaces of the real property from a perspective of a current view, the current view being one of the plurality of views obtained using ground truth image data or one of the plurality of synthesized views derived from processing ground truth data and associated with the current space;	623:6-625:3	Insufficient evidence of program commands

identifying the current space in the real property where the current view is located using the capture locations indicated by the annotated ground truth image data	625:4-625:24	Insufficient evidence of program commands
visually presenting, on the user interface, at least a portion of the virtual model, a map user interface element, and a text user interface element, the map user interface element indicating a position of the current view in the current space, the text user interface element including a label identifying the current space in the real property within which the current view is located;	625:25-627:4	Insufficient evidence of program commands
wherein the portion of the virtual model, the map user interface element and the text user interface element is functionally linked based on the position of the current view in the real property.	627:5-627:13	Insufficient evidence of program commands

973 patent, claim 4		
the computer readable memory medium of claim 1 wherein the map user interface element is a 2D projection of the rendered virtual model.	628:2-628:18	Insufficient evidence of program commands
973 patent, claims 16		
The computer-readable memory medium of claim 1 wherein the method further comprises: facilitating a transaction regarding the real property.	629:13-630:10	Insufficient evidence of program commands
973 patent, claim 17		
The computer-readable memory medium of claim 16 wherein the transaction further comprises one or more of: scheduling a tour, initiating messaging, initiating audio communication, customer relationship management, transaction document signing or tracking, on-line negotiations, offer submissions, inspection	629:13-630:10	Insufficient evidence of program commands

support, financing support, real-estate transaction workflows, data tracking, or reporting functions.		
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Claim, Limitation	Trial Transcript Discussion	Issue
673 patent, Claim 1		
A method, comprising:	564:4-570:2	
receiving image data of a plurality of spaces in a property, the image data including a plurality of images captured from a plurality of viewpoints;	See above	Insufficient evidence
creating a plurality of panoramas of the plurality of spaces using the image data;	See above	Insufficient evidence
rendering a virtual model of a selected space among the plurality of spaces using the plurality of panoramas;	See above	Insufficient evidence
causing a device to display the virtual model with a first label indicating a location of the selected space; and	See above	Insufficient evidence

defining spatial boundaries of the plurality of spaces in the property using the image data, the plurality of spaces including a plurality of rooms in the property,	See above	Insufficient evidence
wherein the image data includes metadata associated with the plurality of images, the metadata indicating capture locations of the images,	See above	Insufficient evidence
wherein rendering the virtual model of the selected space includes rendering a 3D scene of the selected space using the plurality of panoramas, and	See above	Insufficient evidence
wherein rendering the 3D scene includes: determining camera geometry using the plurality of images; receiving a selected viewpoint in the selected space;	See above	Insufficient evidence

generating a point cloud of the 3D model; determining a geometric proxy for the selected viewpoint using the determined camera geometry and the point cloud; and generating the 3D model using the geometric proxy.		
673 patent, claim 2		
The method of claim 1, further comprising: calibrating the plurality of panoramas using the camera geometry, wherein the camera geometry is determined by a first pass feature detection using the plurality of images.	570:11-573:6	Insufficient evidence.
673 patent, claim 10		
A system, comprising: a processor; a memory storing non-transitory program commands, which, when executed by the processor, cause the processor to:	532:17-534:19	Insufficient evidence to show that there is “a processor” and “a memory” that has commands which when executed cause the processor to do anything. Failure to identify a particular processor.

receive image data of a plurality of spaces in a property, the image data including a plurality of images captured from a plurality of viewpoints;	536:21-539:18	Insufficient evidence of program commands
create a plurality of panoramas of the plurality of spaces using the image data;	540:23-543:21	Insufficient evidence of program commands
render a virtual model of a selected space among the plurality of spaces using the plurality of panoramas;	543:22-546:4	Insufficient evidence of program commands
cause a device to display the virtual model with a first label indicating a location of the selected space,	546:10-547:24	Insufficient evidence of program commands
wherein the image data includes metadata associated with the plurality of images, the metadata indicating capture locations of the images,	547:20-549:7	Insufficient evidence of program commands

wherein the program commands cause the processor to render the virtual model of the selected space by rendering a 3D scene of the selected space using the plurality of panoramas, and	550:4-22	Insufficient evidence of program commands
wherein the program commands cause the processor to render the 3D scene by: determining camera geometry using the plurality of images; receiving a selected viewpoint in the selected space; generating a point cloud of the 3D model; determining a geometric proxy for the selected viewpoint using the determined camera geometry and the point cloud; and generating the 3D model using the geometric proxy.	550:23-560:1	Insufficient evidence of program commands

Claim, Limitation	Trial Transcript Discussion	Issue
111 patent, Claim 18		
A method, comprising:		
receiving image data of a plurality of spaces in a plurality of rooms in a real estate property, the image data including a plurality of images captured from a plurality of viewpoints, each image corresponding to a respective one of the plurality of rooms;	601:15-603:2	Insufficient evidence.
creating a plurality of panoramas of the plurality of spaces by processing and/or compositing the image data;	603:3-20	Insufficient evidence
defining a plurality of spatial boundaries of the plurality of spaces in the plurality of rooms in the real estate property using the image data, each of the spatial boundaries	603:23-607:19	Insufficient evidence

delineating a volume of one or more of the plurality of spaces, wherein the volume delineated by a first spatial boundary corresponds to a first floor of the real estate property and the volume delineated by a second spatial boundary corresponds to a second floor of the real estate property, and wherein the defined first spatial boundary and second spatial boundary are further delineations within a third spatial boundary corresponding to a parcel outline of the real estate property;		
in response to receiving a user indication of a floor of the real estate property, using the defined spatial boundary corresponding to the indicated floor, rendering a virtual model of a selected space of the one or more spaces delineated by the spatial boundary corresponding to the indicated floor using	607:23-609:9	Insufficient evidence

one or more of the created plurality of panoramas that correspond to one or more rooms located within the spatial boundary corresponding to the indicated floor; and		
causing a device to display the virtual model with a first label indicating a location of the selected space in one of the generated plurality of spatial boundaries.	609:9-22	Insufficient evidence
111 patent, claim 22		
The method of claim 18 wherein the receiving a user indication of a floor of the real estate property and the rendering a virtual model of a selected space of the one or more spaces delineated by the generated spatial boundary corresponding to the indicated floor, further comprises:	610:2-11	Insufficient evidence
generating and displaying a floor plan corresponding to	610:12-21	Insufficient evidence.

a portion of the real estate property; and		
receiving a user indication of navigation to a floor of the real estate property for performing a virtual tour of the real estate property by receiving an indication to a corresponding location on the floor plan; and	611:10-16	Insufficient evidence
rendering a virtual model of a space that corresponds to the indicated corresponding location on the floor plan.	611:17-612:3	Insufficient evidence.